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RHINOSPORIDIUM GRANULOMA OF THE CONJUNCTIVA*†

BY

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THIS case of *Rhinosporidium* granuloma in the fornix of the right conjunctival sac is the first to be reported from Pondicherry, India.

Case Report

A Hindu boy aged 12 years came to the Ophthalmic Out-patient Clinic of the General Hospital, Pondicherry, on February 9, 1965, with a mass in the upper part of the right eye, which his parents had noticed only a few days previously. There was no history of lacrimation or photophobia and no obvious cutaneous lesions or lymphadenopathy. The past, personal, and family histories were not significant.

Examination.—There was a slight bulge in the middle of the right upper lid. There was no evidence of purulent discharge, but a mild degree of redness involving the superior fornix, and the upper lid was just elevated from the bulbar conjunctiva. The mass was moderately firm on palpation, there was no tenderness. On everting the upper lid, a brownish mass 5 × 3 × 3 mm. covered by tiny yellowish-white specks was seen lying in the upper part of the conjunctival sac. It was pedunculated, attached to the superior fornix slightly nasal to the mid-line, and moved freely with the conjunctiva. There was no evidence of ulceration or induration. Manipulation did not cause bleeding.

The left eye was normal in all respects.

The intra-ocular tensions, lacrimal sacs, corneae, and fundi were normal in both eyes.

Treatment.—Under surface anaesthesia (Anethaine drops) the mass was excised at its stalk.

Result.—The patient has not returned for follow-up examination.

Histopathological Report.—The section consists of spores and sporangia of *Rhinosporidium seeberi* with diffuse lymphocytic, monocytic, and plasma cell infiltration of oedematous fibrous connective tissue stroma covered by stratified squamous epithelium, showing moderate hyperplasia in places. DIAGNOSIS—*Rhinosporidium* granuloma (Fig. 1).

FIG. 1.—Sporangia and spores of *Rhinosporidium seeberi* in oedematous sub-epithelial connective tissue. Lining epithelium shows moderate hyperplasia. Stroma shows diffuse inflammatory cell infiltration. Haematoxylin and eosin. × 96.

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Discussion

Rhinosporidium seeberi is considered to be a *Phycomycete* allied to the family of *Chytridiales* (Ashworth, 1923). All attempts to culture the organism in artificial media or following animal inoculation have so far failed to produce conclusive results. Its life-cycle, mode of transmission, and pathogenesis are not known, but it has been suggested that trauma and contact with infected persons or infected water or soil may play an important role in seeding.

Site and Appearance.—Rhinosporidiosis usually occurs in the nose and naso-pharynx, ocular lesions coming next in frequency (Karunaratne, 1964a). Systemic and other sites of involvement are rare (Rajam, Viswanathan, Rao, Rangiah, and Anguli, 1955; Swamy and Das Gupta, 1956; Agrawal, Sharma, and Shrivatava, 1959). The lesion consists of pink, soft, polypoidal masses, or grape clusters, covered by mucus or blood; white or yellow specks may be scattered all over it, and it may bleed at a touch or on slight manipulation. Histologically the lesions are essentially granulomata with lymphocytic, monocytic, and plasma cell infiltration and foreign body giant cell reaction, together with the characteristic sporangia containing the spores. Foci of calcification may occasionally be seen.

Histochemistry.—The diagnosis is based on clinical and histopathological findings. An unstained wet preparation shows the organism, but special staining techniques are required for confirmation.

Narayana Rao (1963a) has shown that the organisms stain distinctively and exclusively with Alcian blue 8 GX; only the spores and sporangia stain, leaving all other tissue stain-free (Fig. 2). If a smear taken from a polyp suspected to be of rhinosporidial origin is dried and a drop of 0·5 per cent. Alcian blue in 3 per cent. acetic acid is placed on the smear and a cover-slip preparation made, the *Rhinosporidia* can be seen as brilliant blue circles after about 5–10 min.

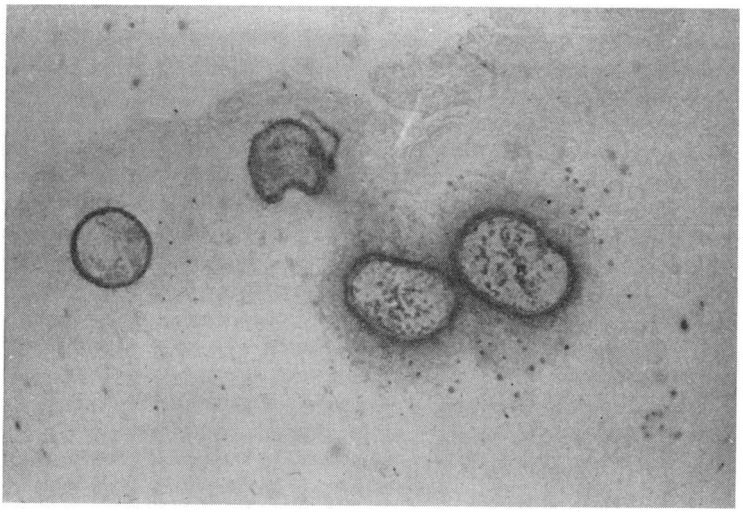

FIG. 2.—Same section as Fig. 1. Alcian blue—PAS reaction.
Note minimal background staining and reaction of spores and sporangia only. AB–PAS. × 96.

Narayana Rao (1963b) has further demonstrated the histochemical reactions to a combination of Alcian blue and periodic acid-Schiff (AB–PAS). The sporangial wall is then seen to consist of PAS-reactive material of varying thickness with a thin lining of AB-reactive material. The spores also show a dark-blue reactive wall with PAS-reactive material inside it (Fig. 3). Haematoxylin and eosin sections of the sporangium and spores do not show differential staining (*cf.* Fig. 4 with Fig. 3). Rao suggested that the spores

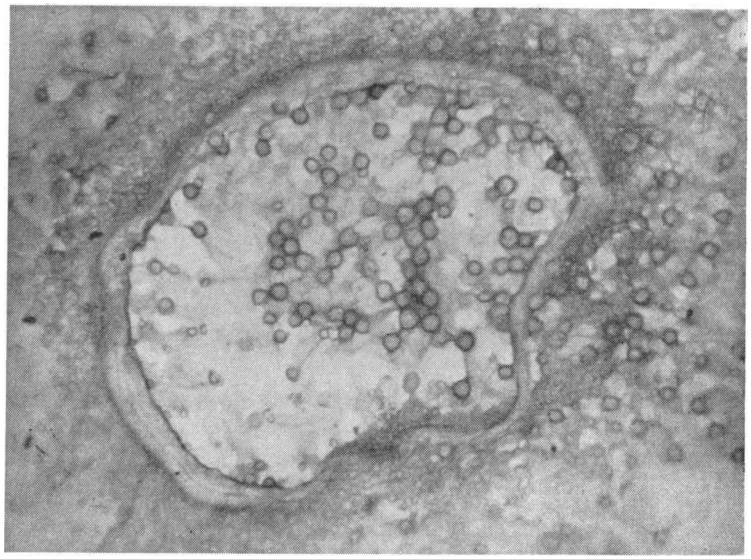

FIG. 3.—One large mature sporangium with spores, some outside in the stroma. Spore walls dark-staining by Alcian blue and spore centres PAS-positive. Note thick wall of sporangium with PAS and AB reactivity. × 480.

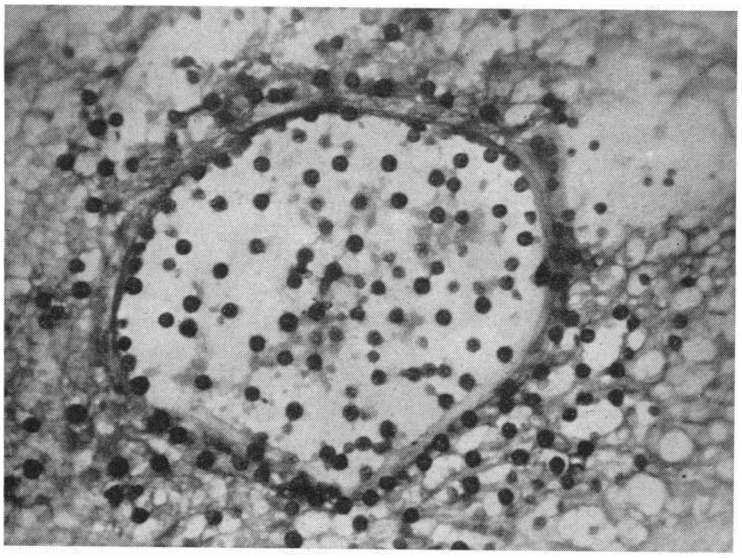

FIG. 4.—Same sporangium at different level stained by haematoxylin and eosin for comparison with Fig. 3. The details of spore and sporangial walls are not well differentiated. × 480.

and sporangial wall consist histochemically of sulphated mucopolysaccharides and that the PAS-reacting material may be partly glycogen and partly glycogen in a highly-polymerized, diastase-resistant form, or combined with proteins.

Incidence.—Ocular lesions due to *Rhinosporidia* are not common in India, about 22 cases having so far been reported (Karunaratne, 1964b). Ingram (1910) reported the first case in the conjunctiva from Madras. In recent years Sen Gupta, Mitra, and Sarkar (1958), Henry (1958), Darbari and Shrivastava (1961), and Srinivas Rao (1962) have reported cases from India. Ocular lesions have also been reported from Brazil and Argentina by Azevedo, Belletato, and Krug (1961) and Rapaport and Mieres (1958).

Karunaratne (1964c) showed that, in India, the incidence of ocular lesions is greater in males than in females (ratio 9:5·1). The average age of affected persons is 10 to 14 years. Ocular lesions are more frequent in Ceylon than in India and particularly in Sinhalese

women. The duration is 15 days to 1 year, most lesions being 2 to 4 months old at the time of presentation (Karunaratne, 1964d). The chief ocular sites are the lids; the bulbar conjunctiva, caruncle, limbus, and inner canthus are rarely affected. Bilateral involvement appears to be rare (Karunaratne, 1964b), but one bilateral case has been reported from San Francisco (Neumayr, 1964).

Treatment.—Excision under surface anaesthesia is the treatment of choice. Recurrences appear to be common among the Sinhalese (Karunaratne, 1964e). A conclusive study of recurrence rates in India cannot be made without a careful follow-up of cases.

Summary

(1) A case of *Rhinosporidium* granuloma of the conjunctiva in a boy aged 12 years is reported from Pondicherry.
(2) Alcian blue stains the organisms selectively and may be used in out-patient departments for diagnosis in doubtful cases.
(3) The literature is briefly reviewed.

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